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PROGRESS REPORT #7

ERTS-1 PROPOSAL NMC NO. 205

CONTRACT NO. NAS 5-21724

July 1973

TITLE: Detection and Monitoring Vegetation Damage Associated with Highway facilities, GSFC ID ST 350.

BY: E. G. Stoeckeler, Principal Investigator

PROBLEMS:

1. Color composites ordered from NASA on 15 March have not been received.
2. Color composites made by G. E. Beltsville Photo Lab had very poor registration. The Lab is in the process of preparing a new composite for a single scene.
3. A U-2 Underflight was made on 3 June, 1973. No data have been received to date. This flight covered about 750 linear miles, with a cloud cover ranging from 0.1 to 0.3. This particular day was the best since the snow disappeared last spring. No good ERTS imagery has been obtained this spring or early summer due to inclement weather.

ACCOMPLISHMENTS:

1. A 4-day period was spent at the General Electric GEMS facility at Valley Forge, Pennsylvania. An attempt was made to establish electronic signatures for vegetation damage associated with highway facilities. Color composites prepared by the GE Photo Lab were not usable because of poor registration. Composites made by NASA were used. Numerous 35 mm slides of the TV screen were taken of dozens of attempts to establish reliable signatures of vegetation damage. A preliminary analysis of these slides indicates that our attempts

were not successful, especially for areas less than 10 acres in extent. For larger areas, results were a little more promising. A cursory evaluation by GEMS personnel, with my general concurrence, is that the ERTS-1 composites used were of poor quality. Msrrs. Raje, Economy, Berman and Stoeri, of the GEMS organization, were hopeful that more reliable signatures might be obtained with adequate composites.

Vinten CIR 70 mm chips were also used at the GEMS facility. Signatures obtained were somewhat more promising. Because of variations in the density of the transparency the signatures appeared to be partially valid only for a part of an individual frame. The same electronic signature applied to a different 70 mm chip was not reliable.

At least for this initial attempt to detect vegetation stress employing electronic analysis techniques at the GEMS facility the results were not encouraging.

2. As has been indicated in previous reports considerable success has attained using standard photo interpretation techniques for detecting vegetation stress in 1:125,000 and 1:500,000 CIR Underflight photography.

PLANNED FOR NEXT PERIOD:

1. When adequate ERTS-1 composites, back ordered in March, are received, a visual analysis of these products will be made.
2. The 3 June Underflight photography will be analyzed when received.
3. An Underflight is scheduled for late July or early August. The seasonal aspect of this study is all important. ERTS-1 imagery and small scale photography taken during this time period is considered crucial. If data are obtained in this time period it is very sincerely hoped that the material will be sent to the writer in time for analysis and inclusion in the final report.

4. A 1:1,000,000 mosiac of the State of Maine, using ERTS-1 Band 7 imagery taken on 10-11 February and 27 February, is being assembled. Prints of the mosiac will be furnished to a number of State Agencies in an effort to create interest in the utilization of available imagery and Underflight photography by their respective departments utilizing Maine Department of Transportation facilities and expertise. At the present time preliminary work in cooperation with the Maine Forestry Department has been initiated to detect spruce bud worm damage, a disciplinary study closely associated with the main theme of NMC No. 205.